NEW LARVAL FOOD PLANTS FOR SOME BUTTERFLIES (LEPIDOPTERA) FROM NORTHERN AND CENTRAL QUEENSLAND, AUSTRALIA

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Abstract

An annotated list of 54 species of new larval food plants for 33 butterfly species from northern and central Queensland is presented. An additional six plant species are listed which confirm recent or poorly documented records. Thirteen (21%) of the recorded plant species are based on oviposition records only and the suitability of these plants may require further observation. For some species of Lycaenidae, life history and biological notes of the early stages and attendant ants are given.

Introduction

The following list of butterfly larval food plants is based on field observations and rearing of the early stages from northern and central Queensland during 1989-1995. The new records are in addition to those reported in several recent papers on larval food plants for the region (Valentine 1988, Sankowsky 1991, Braby 1995) and contribute to the growing list of Australian butterfly food plants (see Common and Waterhouse 1981, Dunn and Dunn 1991). The list is presented in annotated form, summarising details of locality, date, immature stage, numbers and rearing data. In some cases, details on the biology and behaviour of the early stages are given where these appear to have been poorly documented, particularly for the Lycaenidae. Several food plant records are based on oviposition observations only, that is, a female was observed to lay an egg(s) on a particular plant and their suitability may require confirmation.

Butterfly specific nomenclature follows that of Nielsen *et al.* (1996). Introduced plants are designated by an asterisk (*).

HESPERIIDAE

Euschemon rafflesia (W.S. Macleay)

Tetrasyndra pubescens (Benth.) Perkins (Monimiaceae). 9 km W of Paluma, 12.iv.1995. Eggs and numerous larvae, in various instars, were found on several plants growing in tall open forest dominated by *Eucalyptus grandis* W.Hill.

Telicota colon (Fabricius)

Ophiuros exaltatus (L.) Kuntze (Poaceae). Mt Cleveland, 3.iii.1991. One final instar larva was collected from a leaf shelter and reared; a female emerged on 22.iii.1991 after 14 days pupation.

Ischaemum australe R.Br. (Poaceae). 9 km SSE of Cardwell, 7.iii.1992. A female was collected after laying a single egg on a young green leaf in *Melaleuca* swampland.

PIERIDAE

***Delias argenthona* (Fabricius)**

Amyema cambagei (Blakely) Danser (Loranthaceae). Ollera Creek, 10 km NW of Rollingstone, 17.viii.1991. One pupa (parasitised) was found attached to a stem of *Allocasuarina cunninghamiana* Miq. directly beneath clumps of the mistletoe which grew abundantly on the host. No other mistletoe species was present on *A. cunninghamiana* or in the immediate vicinity, the host tree being isolated from others by more than 15 m. Dunn (1995) recently reared fourth instar larvae to adult on this mistletoe.

Amyema miquelii (Lehm. ex Miq.) Tieghem (Loranthaceae). James Cook University, Townsville; Damper Creek, 14 km SSE of Cardwell. All stages were commonly found and reared between March and June on plants parasitising *Eucalyptus platyphylla* F.Muell. in savanna woodland. This plant was not listed by either Common and Waterhouse (1981) or Dunn and Dunn (1991), but the above observations agree with those of Edwards (1948), Fox (1995) and Dunn (1995) who reported *A. miquelii* as a food plant in Queensland near Mitchell, Leyburn and Brisbane.

Amyema sanguinuem (F.Muell.) Danser (Loranthaceae). James Cook University, Townsville, vi-vii.1990, 20.iii.1991, 22-24.iv.1991. Three egg clusters and nine larvae were found on this mistletoe parasitising *Eucalyptus platyphylla* and *E. tereticornis* Smith. Four larvae were reared to adults.

Dendrophthoe glabrescens (Blakely) Barlow (Loranthaceae). Townsville. Frequently used in suburban areas, particularly those clumps growing on ornamental trees of *Callistemon viminalis* (Gaertner) G.Don. McLean (1993) and Moss and Lithgow (1994) recently recorded this species as a larval food plant at Cooktown and near Chinchilla, Queensland, respectively.

Diplatia furcata Barlow (Loranthaceae). 9 km SSE of Cardwell, 14.vi.1992. Twelve eggs were found on foliage of this mistletoe parasitising *Melaleuca viridiflora* Gaertner in paperbark swampland.

Scrubby Creek, 24 km SE of Cardwell, 29.viii.1992. Four larvae (instars IV and V) were found on foliage of this mistletoe parasitising *Melaleuca viridiflora* in paperbark woodland.

***Delias mysis* (Fabricius)**

Dendrophthoe falcata (L.f.) Ettingsh. (Loranthaceae). Cardwell, 8.vi.1992. A cluster of 11 eggs was found on a leaf of this mistletoe parasitising ornamental *Callistemon viminalis*. W.A. Travers (pers. comm.) has noted that the larvae, and sometimes those of *D. nigrina*, frequently utilise this plant at Cardwell but only during the winter months. The mistletoe illustrated and recorded for *D. mysis* at Kuranda by McCubbin (1971) is almost certainly this species.

***Delias nigrina* (Fabricius)**

Dendrophthoe falcata (Loranthaceae). Cardwell. See notes under *D. mysis*. The mistletoe illustrated and recorded for *D. nigrina* at Kuranda by McCubbin (1971) is almost certainly this species.

***Belenois java* (Linnaeus)**

Capparis canescens DC. (Capparaceae). Not listed by Common and Waterhouse (1981), this species was recorded by Manski (1960) and more recently by Forster (1991) from the coastal and subcoastal areas of Queensland. I also recorded the early stages on this food plant at three inland localities in savanna woodland:

30 km W of Mt. Surprise, 9.x.1991. Three mid instar larvae.

Running River, Hidden Valley, 14.x.1991. Numerous eggs were found in clusters of up to 30 on young terminal shoots.

Leichhardt Range, 25 km (by road) S of Burdekin Falls, 26.iv.1992. 15 pupal exuviae.

***Cepora perimale* (Donovan)**

Capparis canescens (Capparaceae). Mt. Kulburn, 20 km NW of Townsville, 11.ix.1993. One final instar larva and one pupa were found attached to the upperside of leaves in savanna woodland.

NYMPHALIDAE

***Polyura sempronius* (Fabricius)**

Acacia mearnsii De Wild. (Mimosaceae). Nelly Bay, Magnetic Island, 18.xi.1989. One late instar larva and one pupa (parasitised) were collected from foliage in a suburban garden by R. Braley. *A. mearnsii* is not indigenous to the island.

Albizia canescens Benth. (Mimosaceae). Cape Cleveland, 12.viii.1990. One egg and two larvae (instars I and IV) were found on the upperside of foliage of a 1.5 m high plant in eucalypt open forest.

***Vanessa kershawi* (McCoy)**

Helichrysum rupicola DC. (Asteraceae). 8 km W of Paluma, 22.i.1994, 12.05 pm. A female was observed to lay a single egg on a leaf at a roadside verge in tall open forest.

***Junonia villida* (Fabricius)**

Hyptis suavolens (L.) Poit. (Lamiaceae). Mt. Stuart, Townsville, 12.ii.1991. One larva was found feeding on foliage of herb growing amongst rocks at summit.

**Ruellia* sp. (Acanthaceae) - Hermit Park, Townsville, 20.xi.1992. A female was observed ovipositing on the underside of leaves on recently germinated plants following rainfall in a suburban garden.

**Stachytarpheta jamaicensis* (L.) Vahl (Verbenaceae). James Cook University, Townsville,.i.1992. One larva was collected and reared to adult by M. Overton.

LYCAENIDAE

***Paralucia pyrodiscus* (Doubleday)**

Bursaria incana Lindley (Pittosporaceae). Walsh River, 11 km WNW of Herberton, 31.v.1991, 19.viii.1992. All stages and attendant ants, *Notoncus gilberti* Forel, were collected from a localised colony (Wood 1992) in savanna woodland at 750 m. The early stages were associated only with very small stunted plants (<0.8 m high, frequently ≤0.4 m high) which had juvenile leaves only. Eggs were found only on the trunk at the base of the plant; larvae and pupae were below ground against the main trunk with attendant ants. One male emerged in captivity on 4.ix.1992 after a pupal duration of 15 days.

19 km W of Paluma, 28.viii.1993. All stages of a small localised colony and attendant ants, *N. gilberti*, were located on small stunted plants (<0.5 m high) on granitic soils in savanna woodland.

Citriobatus spinescens (F.Muell.) Druce (Pittosporaceae). Bauhinia Creek, 20 km ESE of Duaringa, 6, 8.ix.1990. Eggs, larvae (many of which were parasitised), one pupa and attendant ants, *N. gilberti*, were collected from a small colony in savanna woodland on alluvial soils adjacent to a creek. The early stages were associated with very small plants (<0.5 m high) having juvenile leaves only. Eggs were found only at base of plants, mostly on the main trunk but also on leaf litter. No evidence of adult or early stages was found during subsequent visits on 18.vi.1991 or 31.iii.1992 following the January 1991 floods (Cyclone Joy).

***Hypochrysops ignitus* (Leach)**

Acacia mangium Willd. (Mimosaceae). Porters Creek, 16 km SSE of Cardwell, 7.iii.1994. Six early to mid instar larvae with attendant ants, *Papyrius* sp., were located on foliage of a 1.0 m high plant in the ecotone between gallery rainforest and paperbark woodland.

***Hypochrysops digglesii* (Hewitson)**

Amyema bifurcatum (Benth.) Tieghem (Loranthaceae). Cape Pallarenda, 8 km NW of Townsville, 11.v.1991. Two eggs were located on leaves of mistletoe parasitising *Eucalyptus tessellaris* F.Muell. Larval feeding scars and attendant ants, *Crematogaster* sp., were also evident.

Cranbrook, Townsville, 30.vi.1992. Several empty egg shells, three mid instar larvae and attendant ants, *Crematogaster* sp., were collected from foliage of the mistletoe parasitising *E. tessellaris* in a parkland of remnant savanna woodland.

Amyema miquelii (Loranthaceae). James Cook University, Townsville, iii-iv.1991. All stages and attendant ants, *Crematogaster* sp., were found on a large clump of mistletoe parasitising *Eucalyptus tereticornis*. Several adults were reared from larvae or pupae. Most eggs were laid singly on the leaves of the mistletoe but others were on stems and flowers and some on the eucalypt leaves of the host tree amongst the mistletoe. Early instar larvae were noted to eat only the epidermis of the leaf whereas later instar larvae tended to consume the whole leaf. The early instar larvae did not retreat into shelters, typical of later instar larvae, but remained exposed on leaves during the day, usually one or sometimes two larvae rested on a leaf. Closer examination of these early instar larvae revealed each had eaten a relatively deep but narrow longitudinal groove through the leaf; they remained in this groove so that the body was at least half embeded in the leaf. Only later instar larvae were observed to construct the typical twisted shelters, made by folding a leaf along the groove and then twisting or curling the leaf with silk. Larvae fed most actively at night but all instars also fed during the day. Pupae were usually found in twisted leaf shelters, but sometimes under loose bark of the host tree near the mistletoe clump, or under bark on the ground at the base of the host tree near the attendant ants' nest (*c.* 3 m from mistletoe clump).

Amyema sanguineum (Loranthaceae). James Cook University, Townsville, 20.ii.1992. One final instar larva with attendant ants, *Crematogaster* sp., was collected from a leaf shelter; it pupated on 2.iii.1992 and a female emerged 10 days later.

Dendrophthoe homoplastica (Blakely) (Loranthaceae). James Cook University, Townsville, iv.1991, 10.xii.1992. All stages and attendant ants, *Crematogaster* sp., were recorded on this mistletoe parasitising *Callistemon viminalis*. Several larvae were reared to adult in captivity, the pupal stage varying from 16 to 20 days.

***Ogyris zosine* (Hewitson)**

Amyema bifurcatum (Loranthaceae). Leichhardt Range, 14.5 km (by road) S of Burdekin Falls, 26.iv.1992. Eight late instar larvae and two parasitised larvae were found within a nest of *Camponotus* sp. at the base of a large *Eucalyptus papuana* F.Muell.

37 km S of Lynd Junction, 4.v.1992. One empty pupal shell was collected under loose bark at the base of a small *E. papuana* supporting a clump of mistletoe. Adults and food plant were common in the area.

42 km NE of Lynd Junction, 6.v.1992. Ten larvae, of various instars, one pupa and attendant ants, *Camponotus* sp., were located at the base of *E. papuana* with clumps of mistletoe. Most larvae were in ant galleries in the soil or beneath leaf litter and debris but some were above the ground under loose bark of the host tree. A female was observed in the mid afternoon

displaying characteristic pre-oviposition behaviour which involved trailing the abdomen over the main trunk of the mistletoe.

Stuart, Townsville, 25.vii.1993. Two pupae and attendant ants, *Camponotus* sp., were collected from beneath a rock at the base of a *Eucalyptus tessellaris* supporting clumps of the mistletoe.

Amyema cambagei (Loranthaceae). Ollera Creek, 10 km NW of Rollingstone, 12.iii.1992. Two mid instar larvae and attendant ants, *Camponotus* sp., were found in a hollow of a branch of *Allocasuarina cunninghamiana* which supported a large clump of the mistletoe, the foliage of which had been extensively eaten; the mistletoe grew in abundance on the host tree and no other species of mistletoe was present. The larvae accepted foliage of *A. cambagei* in captivity. A female was observed displaying characteristic pre-oviposition behaviour but did not appear to oviposit; two females were observed displaying similar behaviour on the same tree several months earlier on 20.viii.1991. The record confirms the listing in Common and Waterhouse (1981), which makes only vague reference to this species as a larval food plant.

Amyema miquelli (Loranthaceae). James Cook University, Townsville. This mistletoe was utilised commonly during the wet season, especially clumps parasitising *Eucalyptus platyphylla*; many adults were reared from larvae or pupae, the larvae being attended by *Camponotus* sp. ants

Dendrophthoe glabrescens (Loranthaceae). Ollera Creek, 10 km NW of Rollingstone, 26.i.1992. One mid instar larva was collected from the ant nest of *Camponotus* sp. at the base of a small *Melaleuca* sp. supporting a large clump of the mistletoe. It was reared in captivity on the leaves of *D. glabrescens* and pupated on 16.iii.1992, a female emerged 12 days later.

***Ogyris aenone* (Waterhouse)**

Diplatia furcata (Loranthaceae). Scrubby Creek, 24 km SE of Cardwell, 8.x.1989. One early instar larva was recorded on a leaf of this mistletoe parasitsing *Melaleuca viridflora.*

Porters Creek, 16 km SSE of Cardwell, 15.vi.1992, 30.viii.1992. Three empty pupal shells were collected from within a hollow dead branch and under loose bark of *M. viridflora*; they were found next to clumps of the mistletoe, the leaves of which showed characteristic signs of past larval feeding and which was parasitising the host tree. No other mistletoe species were growing on the host tree.

***Ogyris iphis* (Waterhouse & Lyell)**

Amyema bifurcatum (Loranthaceae). 21 km W of Paluma, 19.ii.1994. Five final instar larvae with attendant ants, *Froggatella kirbii* (Lowne), were collected under loose bark near the base of a *Eucalyptus citriodora* Hook. supporting several clumps of the mistletoe. No other mistletoe species was

parasitising the host tree. The larvae were reared in captivity to adults with five females emerging in iii.1994.

Dendrophthoe glabrescens (Loranthaceae). 15 km W of Paluma, 23.vi.1990. Two final instar larvae with attendant ants, *F. kirbii,* were collected under loose bark of a branch of *Eucalyptus acmenoides* supporting the mistletoe in open forest. The larvae were reared to adults, emerging in viii.1990, with the pupal stage varying from 19 (male) to 20 (female) days. Occasionally the pupae produced a series of audible clicks.

***Jalmenus eichhorni* Staudinger**

Acacia holosericea G.Don (Mimosaceae). Forty Mile Scrub, 25.ii.1994. All stages and attendant ants, *Iridomyrmex sanguineus* Forel, were collected from a colony (discovered by G.A. Wood) on regenerating plants at a roadside verge disturbed by recent road grading activities.

***Deudorix epijarbas* (Moore)**

Salacia chinensis L. (Hippocrateaceae). Garners Beach, 8.vi.1992. One female was reared from a larva collected from within fruit. The larva pupated on 25.vi.1992 and a female emerged 18 days later. Before pupation the larva left the fruit and pupated between strips of bark placed in a breeding box.

***Candalides absimilis* (C. Felder)**

Pongamia pinnata (L.) Pierre (Fabaceae). Damper Creek, 14 km SSE of Cardwell, 30.xi.1991. A female was collected after laying five eggs on young terminal leaves of very small seedlings (<150 mm high) along the edge of gallery rainforest during the mid-morning. All eggs were laid singly and three of these hatched two days later. On 6.xii.1991 one first instar larva and one mid instar larva were found on the underside of leaves. On 9.x.1993 another larva was collected from the underside of a leaflet of regenerating foliage; it was reared in captivity but would only eat the new soft growth. The larva pupated on 17.x.1993 and a female emerged 10 days later.

Atalaya salicifolia (A.DC.) Blume (Sapindaceae). The Pinnacles, Hervey Range, 27.i.1992. One larva was collected from flower buds by J.M. Billington.

***Candalides erinus* (Fabricius)**

Cassytha pubescens R.Br. (Lauraceae). 10 km N of Nebo, 10.ix.1990. Numerous eggs were found on the softer young vines which grew in abundance over *Melaleuca nervosa* (Lindley) Cheel. Adults were common in the immediate vicinity and one final instar larva was collected by vigorously shaking the host tree.

9 km SSE of Cardwell, 27.xi.1991. Several eggs were located on the new growth of a large vine which grew profusely over *M. nervosa* in paperbark swampland; adults were common in the area.

Mt. Kulburn, 20 km NW of Townsville, 11.ix.1993. One empty pupal shell was recovered from a vine growing in savanna woodland.

***Nacaduba berenice* (Herrich-Schaffer)**

Atalaya salicifolia (Sapindaceae). The Pinnacles, Hervey Range, 27.i.1992. A female was observed by J.M. Billington ovipositing on new terminal foliage. Three larvae, associated with numerous small black ants, were collected from flower buds.

Guioa acutifolia Radlk. (Sapindaceae). Bluewater State Forest, 22 km (by road) SW of Bluewater, 26.xii.1991. Two females were observed ovipositing on new terminal leaves in tall open forest with a rainforest understorey. Three empty eggs and one early instar larva were also found on the new growth. All eggs were laid singly.

***Nacaduba biocellata* (C. & R. Felder)**

Acacia bidwillii Benth. (Mimosaceae). James Cook University, Townsville, 10.xi.1990. Two larvae collected from flower buds were reared to pupation. Two males emerged on 22, 26.xi.1990, the pupal stage being eight days in captivity.

***Psychonotis caelius* (C. Felder)**

Alphitonia petriei Braid (Rhamnaceae). Bluewater State Forest, 34 km (by road) SW of Bluewater, 27.iii.1993. Two females were observed during the early afternoon ovipositing on small plants (<0.5 m high) in rainforest; a further three eggs were located on a single leaf. All eggs were laid singly on the underside of the leaves, along the edge of a vein. One egg hatched about four days after being laid.

12 km (by road) W of Kennedy, 27.ii.1994. One final instar larva was collected from the underside of a leaf of small plant (c. 3 m high) in a gap in rainforest. It pupated on 4.iii.1994 and a male emerged eight days later. Jackson (1996) recently recorded this species as a food plant at Paluma.

***Theclinesthes miskini* (T.P. Lucas)**

Acacia aulacocarpa Benth. (Mimosaceae). Paluma, 17.iii.1992. A female was observed ovipositing along the edge of upland rainforest. The eggs were laid on new softer foliage of a branch, about 3 m above the ground, which had numerous small black ants.

Acacia crassicarpa Benth. (Mimosaceae). Near Damper Creek, 14 km SSE Cardwell, 1, 11.iii.1992. Eggs and several larvae, in various instars, were found on foliage of two small plants (0.4 m, 0.6 m high) in eucalypt open forest. Larvae on each plant were attended by different species of unidentified ants.

Acacia mangium Willd. (Mimosaceae). Damper Creek, 14 km SSE Cardwell, 9.ii.1990. Four larvae with attendant ants were found on a small

plant (c. 0.5 m high) along the margin of gallery rainforest. On 12.xii.1991 eggs, numerous larvae and attendant ants were found on two additional plants, also small (<1.0 m high). The eggs had been deposited singly on terminal shoots and stems. The larvae were feeding mostly on the phyllodes but two were feeding on fleshy galls. In captivity larvae were reared to adults on both phyllodes and galls; the pupal stage lasting eight days.

Eucalyptus clarksoniana D.J. Carr & S.G.M. Carr (Myrtaceae). Near Damper Creek, 14 km SSE Cardwell, 2.xii.1991. A female was observed to lay two eggs on the stem of a very small plant (c. 100 mm high) regenerating in eucalypt open forest after fire two months earlier. Small black ants were present. On 4.iii.1992 another female was observed to lay a single egg on young soft terminal foliage of another small plant (0.5 m high). Numerous small black ants were noted attending leaf hoppers. On 11.iii.1991 a third female was observed ovipositing on the stems, axils and young terminal leaves of another very small plant (c. 150 mm high). On this occasion, however, no ants were present.

Eucalyptus tessellaris (Myrtaceae). Ollera Creek, 10 km NW of Rollingstone, 14.iv.1995. A female was disturbed after laying eight eggs on leaves and axils of a small plant (0.4 m high) in an open cleared area. All eggs had been laid singly.

***Theclinesthes onycha* (Hewitson)**

Cycas media R.Br. (Cycadaceae). Forster and Machin (1994) made vague reference to this specioes as a possible food plant. In the Cardwell district, females were found to commonly use this species in lowland eucalypt open forest. They laid numerous eggs but only on new, soft fronds arising from apex of the trunk, especially (but not always) on plants regenerating after fire. The larvae fed only on new, soft growth, sometimes causing considerable damage such that regeneration would be delayed until the next season; the fronds of such plants had a scorched sticky appearance. Larvae fed at night or sometimes very late in the afternoon, retreating by day to hide at the base of new fronds. They were attended by at least two species of ants, including *Camponotus* sp. The pupae were well-hidden and usually found at the base of older fronds some distance from the apex of the trunk. The pupal duration in March was six days.

Cape Upstart National Park, 28.ix.1991. Eggs and larvae were located on new developing fronds, in similar circumstances to those described above.

***Theclinesthes sulpitius* (Miskin)**

Suaeda australis (R.Br.) Moq. (Chenopodiaceae). Cleveland Bay, Townsville, 25.viii.1991. Eggs and an early instar larva were collected from terminal leaves and several late instar larvae were found resting on dry sand beneath the food plant, which formed a dense mat in saltmarsh habitat. One pupa was also found beneath the plant, concealed in the crevice of driftwood.

Adults were locally common, frequently alighting on the plant. Several adults were reared from larvae in captivity, the pupal duration in September being eight days.

Ross River, Townsville Golf Course, 2, 4.iv.1993. All stages were found commonly in saltmarsh habitat along a river flat. Eggs were found singly on terminal foliage, the larvae mostly on leaves. A pre-pupa and empty pupal shells were found beneath the plant attached to dead sticks, beneath rocks, on loose sand or to branches of the food plant. The pupal duration was six days in April. The habitat, including *S. australis*, was noted to be periodically inundated by saline water from high tides.

***Jamides phaseli* (Mathew)**

Indigofera pratensis F.Muell. (Fabaceae). Cardwell, 27.ii.1992. Two final instar larvae were collected from flowers in eucalypt open forest. A male emerged on 8.iii.1992 and a female on 9.iii.1992, the pupal duration being six days.

***Catochrysops panormis* (C. Felder)**

Galactia tenuiflora (Sprengel) Wight & Arn. (Fabaceae). Near Damper Creek, 15 km SSE of Cardwell, 11.iii.1992. A female was observed to lay two eggs on young flower buds of a creeper growing over rocks in eucalypt open forest. The eggs were concealed deep inside the calyx.

***Lampides boeticus* (Linnaeus)**

**Crotalaria goreensis* Guillemin & Perrottet (Fabaceae). Cardwell, 25.iv.1990. A female was observed to lay a single egg on a flower bud at a roadside verge in open forest.

Campaspe River, 17.5 km NE of Pentland, 29.iv.1992. Numerous eggs were found on flower buds and two mid instar larvae were found feeding inside the buds. Five final instar larvae (later found to be parasitised) were collected from the base of the trunk in river sand.

Crotalaria mitchellii Benth. (Fabaceae). Blackdown Tableland (23°42'S, 149°07'E), 1.iv.1992. Numerous eggs and one final instar larva were found on the flower buds in savanna woodland on alluvial soil.

**Crotalaria novae-hollandiae* DC. (Fabaceae). Junction Creek, 9 km W of Mt. Surprise, 6.v.1992. Numerous eggs were located on flower buds along the edge of a watercoarse in river sand. Adults were common.

**Indigofera suffruticosa* Miller (Fabaceae). Townsville, 9.viii.1991. A female was observed to lay a single egg at the base of a flower at a roadside verge.

***Zizeeria karsandra* (Moore)**

Glinus oppositifolia (L.) R.DC. (Molluginaceae). Campaspe River, 17.5 km NE of Pentland, 29.iv.1992. Numerous eggs and one mid instar larva were

found on the underside of leaves in the sand of a dry river. Adults were very common.

***Famegana alsulus* (Herrich-Schaffer)**

Galactia tenuiflora (Fabaceae). James Cook University, Townsville, 6.iii.1994. A female was observed ovipositing on terminal flower buds of a creeper in savanna woodland. All eggs were laid singly.

Indigofera pratensis. Cardwell, 27.ii.1992. Two final instar larvae were collected from flowers in eucalypt open forest. One larva pupated on 1.iii.1992 and a male emerged six days later.

Ilbilbie, 27.iii.1992. One final instar larva collected feeding on flowers in eucalypt open forest. A male emerged on 12.iv.1992.

Vigna lanceolata Benth. (Fabaceae). James Cook University, Townsville, 10.iii.1991. A female was observed to lay a single egg on a developing leaf bud in savanna woodland.

***Zizula hylax* (Fabricius)**

Dipteracanthus australasicus ssp. *corynothecus* (Benth.) R. Brown (Acanthaceae) (voucher AQ 625003, Queensland Herbarium). 8 km S of Wandoan, 16.iii.1994. Three females were observed to lay four eggs at a roadside verge in remnant woodland. The eggs were laid singly on the flower buds or corolla and sepals of expanded flowers. Many other eggs were found on flowers. Examination of older fruits revealed frass and signs of recent feeding activity but no larvae or pupae were found. Adults of both sexes were very common near the plants.

***Euchrysops cnejus* (Fabricius)**

Macroptilium atropurpureum (DC.) Urban (Fabaceae). Harvey Range, approx. 40 km WSW of Townsville, 21.i.1990. Numerous eggs were found on flower buds and several larvae found feeding inside the flowers of a creeper growing over rock scree in savanna woodland. Adult females were common, flying close to or settling upon the leaves.

James Cook University, Townsville, 4.ii.1992. A female was observed ovipositing on a creeper in a disturbed area of savanna woodland. All eggs were laid singly on stems, stipules, flower buds and the upper and underside of leaflets.

Acknowledgments

I am particularly grateful to Russell Cumming (Department of Environment, Townsville) and Betsy Jackes (Botany Department, James Cook University of North Queensland) for identifying many of the plant specimens; Peter Jobson (Botany Department, James Cook University of North Queensland) and Lyn Craven (National Herbarium, CSIRO) also assisted with plant determinations; Steve Shattuck (Division of Entomology, CSIRO) identified

the attendant ants of lycaenid species; and Ted Edwards, Andrew Atkins and Max Moulds kindly commented on a draft of the manuscript. Jeremy Billington, Graham Wood, Bill Travers, Max Overton and Rick Braley kindly provided or drew my attention to several food plant records.

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